Grassroots Science Museums

PROVIDING SCIENCE AND TECHNOLOGY EDUCATION THROUGHOUT NORTH CAROLINA

1. MISSION & PROGRAMS

The *Grassroots Science Museums*, a statewide partnership, is dedicated to inspiring and educating youth and adults in science and technology for North Carolina's competitive future.

The *Grassroots Science Museums* are in a public/private partnership with the state of North Carolina to advance learning and career development in science and technology or STEM *(science, technology, engineering, and math*). They leverage state funding from the citizens of North Carolina to link science and technology learning to future careers for the benefit of North Carolina citizens - this drives citizens to the private sector in the science and technology fields. The *Grassroots Science Museums* strengthen communities and regional economic development through tourism, business recruitment and quality of life experiences.

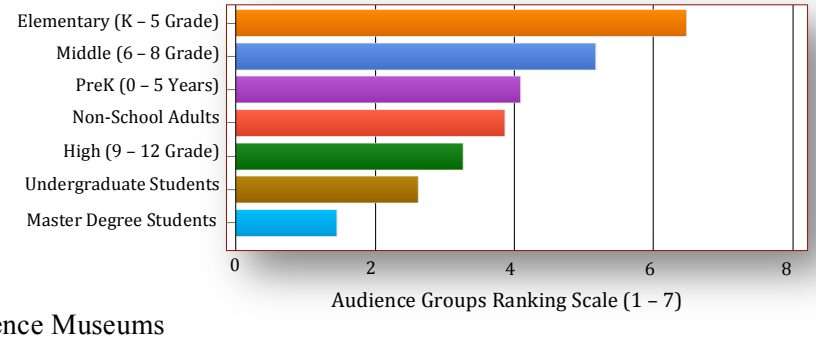
The twenty-seven (27) funded *Grassroots Science Museums* deliver real-world learning experiences in the STEM fields, providing interactive exhibits and programs that are facilitated by education professionals in the museum sites and as traveling experiences to all 100 counties. The range of STEM learning experiences includes, but is not limited to, general science, physical science, natural science, biology, earth science, astronomy, chemistry, math and statistics, nano-science, and computer science. The *Grassroots Science Museums* collectively provide hundreds of interactive exhibits, and facilitated and traveling educational programs; the following is a snapshot containing specific examples that represent the breadth of the diverse science and technology educational experiences offered:

- INTERACTIVE EXHIBITS:
  - **"PhysicsWorks"** (Sciworks Science Center – *Winston Salem*) This interactive exhibit hall demonstrates principles of motion, forces, and simple machines;
  - **"Getting Off the Ground"** (Port Discover – *Elizabeth City*) An interactive exhibit on aviation technology. It features a flight simulator and experiments with the principles of flight;
  - **"Math Moves"** (Museum of Life and Science – *Durham*) Visitors immerse themselves in a world of large and small, shadows and shapes, motion and sound. Families and children ages 6-12 experience concepts of ratio and proportion, balance and imbalance, scaling and construction, and graphing speed and velocity.

- FACILITATED & TRAVELING EDUCATIONAL PROGRAMS:
  - **"Rockets and Robots"** (Greensboro Children's Museum – *Greensboro*) The exhibit inspires children to design rockets using recycled materials, and then collect and graph data learning to analyze and compare.
  - **"SciGirls"** (Pisgah Astronomical Research Institute – *Rosman*) Exploratory hands-on STEM science activities for girls ages 9-14 encourage future participation in STEM courses by female students.
  - **"Avian Husbandry Internship"** (Sylvan Bird Park – *Scotland Neck*) A professional program for zoology students using an immersion instruction method, and for K-12 biology educators.

2. CUSTOMER/ TARGET POPULATION

The *Grassroots Science Museums* serve all 100 counties in North Carolina. They engage audiences through visits to the museums and traveling programs that are brought out to North Carolina citizens benefiting students, teachers, and families. Collectively, the *Grassroots Science Museums* have an annual attendance of nearly 3 million North Carolina citizens. In 2012, the *Grassroots Science Museums* conducted a survey of the museums' STEM education deliverables. To understand their target populations, the museums were asked to rank seven (7) general STEM audience groups defined by age/grade level served. Below are the results from the ranking survey.



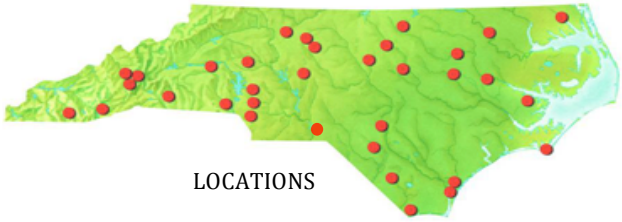
As the above graph demonstrates, the top 3 groups served by the *Grassroots Science Museums* are "*Elementary Students"* (K -5 grade); "*Middle Students"* (6–8 grade); and "*Pre-K"* (0 to 5 years). These groups are accompanied by parents, grandparents, and teachers, which is the reason for the significant ranking (4th) as *"Non-School Adults."* As valued educational resources, these science museums are forums for science learning to benefit all audiences in each community.

3. ORGANIZATION INCEPTION

While some of the science museums have been providing services since the early 1900's, the *NC Grassroots Science Museums Collaborative* was organized and began receiving funding in FY1992-93 with the purpose of providing leadership in science literacy to students and teachers, and to enhance science education for schools and communities throughout North Carolina. The Collaborative was then incorporated in 2000 - a private grant in 2000 created an endowment that helps to support the Executive Director position for the Executive Director. This single position still exists and is critical for organizing the now 27 diverse and geographically distributed member museums in meeting their science education missions.

4. FOOTPRINT

The twenty-seven (27) *Grassroots Science Museums* serve all 100 counties in North Carolina. The tables below list the towns and home counties of each museum. They also show annual attendance figures, which include traveling programs to other counties and visiting families and school groups from other counties. The *Grassroots Science Museums* serve broad geographic areas; services that include *traveling outreach science education programs, teacher professional development programs, educational field trips, and science internships*.



LOCATIONS

MOUNTAINS:

		Home County	Annual Attendance (2011)
Catawba Science Center	(Hickory)	Catawba	141,969
Colburn Earth Science Museum	(Asheville)	Buncombe	23,352
KidSenses Children's Museum	(Rutherfordton)	Rutherford	65,760
Health Adventure	(Asheville)	Buncombe	99,118
Highlands Nature Center	(Highlands)	Macon	17,176
Pisgah Astronomical Research Institute	(Rosman)	Transylvania	42,603
Western NC Nature Center	(Asheville)	Buncombe	105,314

PIEDMONT:

Carolina Raptor Center	(Huntersville)	Mecklenburg	49,572
Discovery Place	(Charlotte)	Mecklenburg / Richmond	745,060
Charlotte Nature Center	(Charlotte)		
Discovery Place Kids	(Huntersville)		
Discovery Place Kids	(Rockingham)		
Fascinate-U Children's Museum	(Fayetteville)	Cumberland	47,433
Granville County Museums	(Oxford)	Granville	6,200
Greensboro Children's Museum	(Greensboro)	Guilford	142,049
GO-Science	(Greenville)	Pitt	19,689
Imagination Station	(Wilson)	Wilson	40,501
Iredell Museums	(Statesville)	Iredell	14,843
Museum of Life & Science	(Durham)	Durham	513,812
Natural Science Ctr. of Greensboro	(Greensboro)	Guilford	301,755
Rocky Mount Children's Museum	(Rocky Mount)	Nash	97,508
Schiele Museum of Natural History	(Gastonia)	Gaston	100,432
SciWorks	(Winston- Salem)	Forsyth	77,611
Sylvan Heights Bird Park	(Scotland Neck)	Halifax	65,259

COAST:

Aurora Fossil Museum	(Aurora)	Beaufort	22,701
Cape Fear Museum	(Wilmington)	New Hanover	47,216
Core Sound Waterfowl Park	(Harker's Island)	Carteret	30,678
Museum of Coastal Carolina	(Ocean Isle Beach)	Brunswick	35,581
Ingram Planetarium	(Sunset Beach)		
Port Discover Science Center	(Elizabeth City)	Pasquotank	12,179
Wilmington Children's Museum	(Wilmington)	New Hanover	52,934

5. BUDGET

The tables below provide an analysis of the funding for the twenty-seven (27) *Grassroots Science Museums*. Several highlights include:

- The combined expenditures for the *Grassroots Science Museums* in 2011 were **$47.3 million**.
- The combined state funding for the *Grassroots Science Museums* in 2012 was **$2, 773,043** or **5.8%** of the Museums' total spending (*projecting similar levels of expenditures*).
- On average, the state cost per museum visitor was **$0.95.**
- The *Grassroots Science Museums* leverage **$16.16** for every **$1** of state funding.
- Eighty-five percent (85%) of the *Grassroots Science Museums* charge a general admission entry fee – the exceptions are noted (**) – however, all Museums collect ticket sales for facilitated and traveling educational programs and many supplement funding with gift shop sales and other fees for service.
- The *Grassroots Science Museums* leverage state funding to attract individual and corporate donations and grants.
- The *Grassroots Science Museums* manage state funds on a state fiscal year basis.

MOUNTAINS:		Annual Attendance	Annual Expense	Annual Grassroots Funding	State Cost per Visitor	Additional Dollars Generated per $1 Grassroots Funding
Catawba Science Center	**(Hickory)**	**141,969**	$2,101,458	$114,845	**$0.81**	**$17.30**
Colburn Earth Science Museum	**(Asheville)**	**23,352**	$268,018	$58,490	**$2.50**	**$3.58**
KidSenses Children's Museum	**(Rutherfordton)**	**65,760**	$439,914	$63, 786	**$0.97**	**$5.90**
Health Adventure	**(Asheville)**	**99,118**	$1,365,748	$122,112	**$1.23**	**$10.18**
**** Highlands Nature Center**	**(Highlands)**	**17,176**	$249,163	$62,206	**$3.62**	**$3.01**
**** Pisgah Astronomical Research Institute**	**(Rosman)**	**42,603**	$960,114	$46,858	**$1.10**	**$19.49**
Western NC Nature Center		**105,314**	$1,062,000	$88,593	**$0.84**	**$10.99**
PIEDMONT						
Carolina Raptor Center	**(Huntersville)**	**49,572**	$1,181,337	$88,024	**$1.78**	**$12.42**
Discovery Place	**(Charlotte)**					
Charlotte Nature Center	(Charlotte)					
Discovery Place Kids	(Huntersville)	**745,060**	$14,490,514	$520,150	**$0.70**	**$26.86**
Discovery Place Kids	(Rockingham)					
Fascinate-U Children's Museum	**(Fayetteville)**	**47,433**	$542,721	$63,616	**$1.34**	**$7.53**
**** Granville County Museums**	**(Oxford)**	**6,200**	$165,913	$46,858	**$7.56**	**$2.54**
Greensboro Children's Museum	**(Greensboro)**	**142,049**	$1,651,159	$105,988	**$0.75**	**$14.58**
GO-Science	**(Greenville)**	**19,689**	$97,893	$46,858	**$2.38**	**$1.09**
Imagination Station	**(Wilson)**	**40,501**	$601,880	67,510	**$1.67**	**$7.92**
Iredell Museums	**(Statesville)**	**14,843**	$235,850	$48,110	**$3.24**	**$3.90**
Museum of Life & Science	**(Durham)**	**513,812**	$8,779,010	$298,049	**$0.58**	**$28.45**
Natural Science Ctr. of Greensboro	**(Greensboro)**	**301,755**	$3,532,268	$146,225	**$0.49**	**$23.16**
Rocky Mount Children's Museum	**(Rocky Mount)**	**97,508**	$529,555	$56,692	**$0.58**	**$8.34**
Schiele Museum of Natural History	**(Gastonia)**	**100,432**	$3,068,930	$180,130	**$1.79**	**$16.04**
SciWorks	**(Winston- Salem)**	**77,611**	$1,639,286	$114,948	**$1.48**	**$13.26**
Sylvan Heights Bird Park	**(Scotland Neck)**	**65,259**	$743,245	$46,858	**$0.72**	**$14.86**
COAST						
**** Aurora Fossil Museum**	**(Aurora)**	**22,701**	$166,726	$46,858	$2.06	**$2.56**
Cape Fear Museum	**(Wilmington)**	**47,216**	$1,726,205	$126,365	$2.68	**$12.66**
Core Sound Waterfowl Park	**(Harker's Island)**	**30,678**	$587,927	$46,858	$1.53	**$11.55**
Museum of Coastal Carolina	**(Ocean Isle Beach)**	**35,581**	$446,697	$61,228	$1.72	**$6.30**
Ingram Planetarium	(Sunset Beach)					
Port Discover Science Center	**(Elizabeth City)**	**12,179**	$127,011	$46,858	$3.85	**$1.71**
Wilmington Children's Museum	**(Wilmington)**	**52,934**	$560,305	$57,973	$1.10	**$8.66**

6. SALARY COMPLIANCE

The single position of Executive Director for the *NC Grassroots Science Museums Collaborative* does not receive an annual salary at or above $120,000. Additionally, the *Grassroots Science Museums* use the state funds in diverse sections of their budgets to support providing science education services. These areas are not limited to salary and include materials, travel, and other program expenses. While there are some museum directors that receive annual salaries above $120,000, those museums are not reliant on state funds for that salary.

7. LOBBYING SERVICES

The *NC Grassroots Science Museums Collaborative's* (NCGSMC) Executive Director is a registered lobbyist with the NC Secretary of State. The Executive Director, in addition to his advocacy duties, manages science exhibit tours, conducts data collection and research on science education impact within the *Grassroots Science Museums,*

coordinates the organization's annual conference, writes grants, and represents the *Grassroots Science Museums* in numerous statewide collaborative partnerships. The Executive Director does not represent any other organization. His total annual compensation package is $81,180, which is supported by an endowment from private sources and annual museum fees – state funds do not support this position.

In December 2010, the acting Executive Director retired from the *NC Grassroots Science Museums Collaborative (NCGSMC)* and the position was not filled until August 2011. During the NCGA budget cycle in the spring of 2011, the NCGSMC had not staffed the executive director position. To temporarily fill in these services, the NCGSMC hired Stephen Saucier (EV Museum Consulting) who then registered as a lobbyist – this agreement was on a contract basis for the period April to July 2011. Stephen Saucier was then hired in August 2011 as NCGSMC's Executive Director – he currently serves in this capacity. In the past 12-months, neither the *North Carolina Grassroots Science Museums Collaborative* nor any of the twenty-seven (27) funded *Grassroots Science Museums* have contracted (one-time or on a retainer basis) with any firm(s) to provide representation in the General Assembly.

8. KEY PERFORMANCE INDICATORS

The table below presents the key performance indicators for *Grassroots Science Museums* with specific attention given to the causal impact of educational programs: *in-house science educational programs; traveling outreach science educational programs; and teacher professional development programs*.

Performance Indicators	2007	2008	2009	2010	2011	2012
TOTAL ATTENDANCE	2,676,077	2,676,914	2,629,568	2,634,776	2,918,305	
TOTAL EDUCATIONAL PROGRAM ATTENDANCE	**2,631,819**	**2,448,656**	**2,199,626**	**2,272,183**	**2,599,453**	
• *IN-HOUSE SCIENCE EDUCATIONAL PROGRAMS ATTENDANCE*	2,130,726	2,004,959	1,779,679	1,794,427	2,116,281	
• *TRAVELING OUTREACH SCIENCE EDUCATIONAL PROGRAMS ATTENDANCE*	492,745	437,456	411,462	465,534	478,829	
• *TEACHER PROFESSIONAL DEVELOPMENT PROGRAMS ATTENDANCE*	8,348	6,241	8,485	12,222	4,343	
• P*ERCENTAGE OF ATTENDEES PARTICIPATING IN EDUCATIONAL PROGRAMS*	**98.3%**	**91.5%**	**84%**	**86.2%**	**89.1%**	
NC STATE SUPPORT (27 museums)	**$3,906,340**	**$3,481,340**	**$3,411,713**	**$3,411,713**	**$2,899,885**	**$2,773,043 (confirmed)**
COMBINED ANNUAL EXPENSE (27 museums)	$40,352,563	$41,464,008	$42,116,672	$42,409,533	$47,320,847	*$47,600,000 (projected)*
STATE SUPPORT AS A PERCENTAGE OF ANNUAL EXPENSE	9.7%	8.4%	8.1%	8%	6.1%	*5.8% (projected)*
ROI – LEVERAGED DOLLARS	**$9.33**	**$10.91**	**$11.34**	**$11.43**	**$15.32**	$16.16 *(projected)*

9. SIMILAR ORGANIZATIONS

There are other organizations in North Carolina that pursue similar objectives as the *Grassroots Science Museums* but which have marked differences in capability, geographic service, audience, and funding structure. These other organizations range from public schools to aquariums and state museums. The *Grassroots Science Museums* are different in that they are:

- Supported by the state **5.8%** of total annual expenses **($2,773,043** (2012) **state support - $47,600,000 projected expense**) leveraging over $16 for every $1 of state funding;
- Geographically distributed throughout the state (27 sites) – from the mountains to the coast, serving both urban and rural communities;
- Providing science and technology educational services to families, teachers, and students on-site and with traveling programs to all 100 counties;
- Developed (capitalized) by the diverse communities and regions in which they serve, not by state dollars;
- Diverse educational experiences in the STEM *(science, technology, engineering and math)* fields, ranging from astronomy to zoology, making connections to STEM careers;
- Providing economic impact to their regions by generating tourism, business and industry recruitment, and quality of life experiences.

The *Grassroots Science Museums* serve as the nexus for 27 collaborating museums and statewide partnerships. Without this pivotal role, critical educational services in science and technology would be greatly diminished and leave too many North Carolina students lacking pathways to skills development in the STEM fields. Families, students and teachers would be without a wide range of STEM educational experiences and their connections to future careers at a time when the STEM fields are the fastest growing sectors for jobs and economic growth. North Carolina would lose the important and timely economic catalysts these arrangements provide.

10. BUDGETARY IMPACT

The *Grassroots Science Museums* manage operating budgets that include diverse sources of revenue. These sources of revenue are divided into 2 primary classes:

1. **Earned Income -** ticket sales, admission entry, program fees, field trips, special exhibit fees, gift shop sales, teacher professional development, traveling outreach programming, rental fees, food service, and other fees for service;
2. **Contributed Income** – Individual donations, corporate donations, exhibit underwriting or sponsorship, grants, North Carolina state support (Grassroots), fundraising events, Board of Directors support, local municipal support, and other direct financial and in-kind support.

Each of the twenty-seven *Grassroots Science Museums* create their own budget and build their system of revenue streams – the above is a pro forma sample of what is normally included in the revenue package by each.

Collectively, the twenty-seven (27) *Grassroots Science Museums* total combined annual expense is **$47,320,847** (2011). The total combined state funding is **$2,773,043** (2012). This would be 5.8% of the combined annual expense for all of the 27 science museums – an average of $.95 per visitor (state cost). The *Grassroots Science Museums* are in a public/private partnership with the state of North Carolina leveraging **$16.16** for every **$1** of state funding. On top of the additional dollars leveraged for annual support, millions of dollars are generated each year from private sources to expand services, secure innovative exhibits, and raise the community value – the *Grassroots Science Museums* are community development projects.

In 2011, the *Grassroots Science Museums* received a reduction of **15%** ($511,828); and, in 2012 a reduction of **4.4%** ($126,842). These reductions, while requiring many structural changes to operating budgets and service deliverables, proved to be less than devastating, but caused systemic challenges in the capacity to provide educational services and affected the ability to leverage other sources of revenue. Science education programs were reduced in number, staff sizes were trimmed, part-time hours were reduced, and administrative operations were made more lean; additionally, fees for service were increased, sale items were marked up, and marketing efforts were scaled back. In some cases this made many of the science museums more efficient, but in most cases it reduced effectiveness, the quantity of science education programs offered, and the ability to penetrate into small rural communities.

The implementation of a goal to eliminate future state support of the *Grassroots Science Museums* would remove the central leveraging instrument needed to generate a diverse system of revenue streams. The value that is provided to the *Grassroots Science Museums* by the state's investment in this public / private partnership raises the level of attractiveness and consideration for funding from private sources, and strengthens our partnerships with private industries in the STEM fields. Both the level of funding and the source of funding provide the strength of this leveraging capability. The impact of losing these key attributes would be devastating to the leveraging system that has been constructed and the fragile mix of revenue streams that are built on the premise of this core and respected support.

These arguments are not made for the purpose of keeping facilities and organizations simply operating – that would be self-serving. Rather, they are presented to articulate the *impact* these *Grassroots Science Museums* provide – it's the impact of science and technology education and the economic opportunities it creates that is at stake for the citizens of NC. The funding comes from the citizens and is used to directly benefit citizens. The continuation of funding and the leveraging multiplier effect it provides fuels the delivery of science and technology experiences at a time when we need to bring more of our children into the STEM fields and resource schools, particularly at the K-5 level, when demand for science and technology education is at an all time high. With the state's investment, the *Grassroots Science Museums* have been, and will continue to be, an effective tool in the state's economic development tool chest.